substrate **51**, decreases continuously from the bottom **61**A to the top **61**B of the projection **61**. Defining the shape of the projection **61** as described above allows the effective refractive index to change gradually in the region between the air space **13** and the outer surface of the lower substrate **51**, thereby further reducing the light reflection and diffraction at the boundary between the air space **13** and the lower transparent electrode **55**. The same applies to the combination of each of the projections **62**, the bottom **62**A and the top **62**B of the projection **62**, the upper substrate **52**, and the upper transparent electrode **56**.

[**0085**] It should be understood that the shape and the pattern of the projections **61** and **62** are not limited to the ones described in the second embodiment, but the projections **61** Land **62** may be formed in any of various shapes and patterns in a similar fashion to the projections in the first embodiment without departing from the spirit and scope of the present invention.

[**0086**] The structure of a digital resistive contact-type touch panel according to a third embodiment of the present invention will now be described. The overall structure and the principle of position detection of the digital resistive contact-type touch panel according to the third embodiment will be described briefly with reference to **FIG. 10**. **FIG. 10** is a plan view of the overall structure of the touch panel according to the third embodiment wherein the touch panel is viewed from above an upper substrate of the touch panel such that a lower substrate and the upper substrate of the touch panel are staggered while being parallel to each other. **FIG. 10** corresponds to **FIG. 2** in the first embodiment.

[**0087**] Since the basic structure of the digital resistive contact-type touch panel **70** according to the third embodiment is the same as that of the analog resistive contact-type touch panels according to the first and second embodiments, descriptions about the basic structure of the former touch panel will not be repeated, and only the differences will be described briefly.

[**0088**] The analog resistive contact-type touch panel has the lower transparent electrode and the upper transparent electrode formed on substantially the entire inner surfaces of the lower substrate and the upper substrate, respectively. Meanwhile, a touch panel **70** according to the third embodiment has lower transparent electrodes **75** and upper transparent electrodes **76** formed on the inner surfaces of a lower substrate **71** and an upper substrate **72** in a stripe-like configuration, respectively. In addition, the lower transparent electrodes **75** and the upper transparent electrodes **76** are arranged so as to cross each other.

[**0089**] Each of the lower transparent electrodes **75** is connected to a corresponding line of wiring **81** so that the lower transparent electrode **75** has its own electric potential. The same applies to the combination of each of the upper transparent electrodes **76**, a corresponding line of wiring **82**, and the upper transparent electrodes **76**.

[**0090**] The touch panel **70** according to the third embodiment is configured by using a resistive contact type in the same fashion as the touch panels according to the first and second embodiments. That is, the touch panel **70** has a structure in which the flexible upper substrate **72** is deformed at a position of the upper substrate **72** which is pressed by a finger, a pen, or the like from the outer surface of the upper substrate **72**, thereby causing one of the upper transparent electrodes **76** to come into contact with the corresponding one of the lower transparent electrodes **75** at the pressed position. This structure allows the touch panel **70** to perform position detection.

[**0091**] The principal of the position detection in the touch panel **70** according to the third embodiment will now be described briefly. For position detection in the horizontal direction shown in the drawing, a predetermined voltage is applied to each line of wiring **82** of the upper substrate **72** so as to provide each of the upper transparent electrodes **76** with a different potential while providing all the lower transparent electrodes **75** with an equipotential. Thus, a horizontal position is detected based on the principal in which the detected voltage varies depending on the position where one of the lower transparent electrodes **75** is put in contact with another one of the upper transparent electrodes **76** by a finger, a pen, or the like.

[**0092**] In the meantime, position detection in the vertical direction shown in the drawing is accomplished in a similar fashion to that in the horizontal direction shown in the drawing. That is, a predetermined voltage is applied on each line of wiring **81** of the lower substrate **71** so as to provide each of the lower transparent electrodes **75** with a different potential while providing all the upper transparent electrodes **76** with an equipotential. Thus, a vertical position is detected based on the principle in which the detected voltage varies depending on the position where one of the lower transparent electrodes **75** is put in contact with another one of the upper transparent electrodes **76** by a finger, a pen, or the like.

[**0093**] With the above-described principle of position detection in the vertical and horizontal directions, a position (a coordinate point) where one of the lower transparent electrodes **75** is put in contact with another one of the upper transparent electrodes **76** by a finger, a pen, or the like is detected. The digital touch panel, however, is different from the analog touch panel in position detection. In other words, it is capable of detecting only positions where the lower transparent electrodes **75** and the upper transparent electrodes **76** cross.

[**0094**] The present invention is applicable to the digital resistive contact-type touch panel **70** as described above. The touch panel **70** according to the third embodiment may have a structure in which fine projections are formed in a predetermined pattern on the inner surfaces of the lower substrate **71** and the upper substrate **72**, and the lower transparent electrodes **75** and the upper transparent electrodes **76** are formed in a stripe-like configuration over the inner surfaces of the lower substrate **71** and the upper substrate **72** having the fine projections thereon in a similar fashion to the touch panel in the first embodiment. Alternatively, the touch panel **70** may have a structure in which the stripe-like lower transparent electrodes **75** and the stripe-like upper transparent electrodes **76** both having fine projections with a predetermined pattern are formed on the surfaces of the flat lower substrate **71** and the flat upper substrate **72** in a similar fashion to the touch panel in the second embodiment.

[**0095**] With this structure, the touch panel **70** has features similar to those of the first and the second embodiments. In other words, the light reflection at the boundary between the air space and the lower transparent electrodes **75** and at the